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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,271	07/29/2003	Marvin Glenn Wong	10020699-1	5689

7590 10/31/2005  
AGILENT TECHNOLOGIES, INC.  
Legal Department, DL429  
Intellectual Property Administration  
P.O. Box 7599  
Loveland, CO 80537-0599

EXAMINER
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DOLAN, JENNIFER M

ART UNIT	PAPER NUMBER
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2813

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/629,271

Applicant(s)

WONG ET AL.

Examiner

Jennifer M. Dolan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-46 is/are pending in the application.
- 4a) Of the above claim(s) 31-41, 43 and 44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-28, 42, 45 and 46 is/are rejected.
- 7) ☒ Claim(s) 29 and 30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/29/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Species I, claims 25-30, in the reply filed on 7/28/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 24, 42, 45, and 46 are considered generic, and will be examined. Claims 31-41, 43, and 44 are withdrawn from further consideration as being drawn to a nonelected species, there being no allowable generic claim.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 24-27, 45, and 46 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,691,059 to Moh.

Regarding claims 24, 45, and 46, Moh discloses a semiconductor substrate material (column 1, lines 15-40) formed into a wafer (column 12, lines 45-55) or an integrated circuit die (column 3, lines 10-17; column 7, lines 9-13; column 8, lines 1-3), the substrate material comprising: a multitude of hollow (see column 1, lines 25-40) microspheres (column 1, line 60 – column 2, line 19; column 5, line 52 – column 6, line 58), each one of the hollow microspheres

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having an inner layer (glass-ceramic material layer) and an outer layer (AlN coating layer – see column 2, lines 19-25, column 4, lines 42-67), the inner and outer layers comprising first and second materials differing from one another (the ceramic glass first material and AlN second material are different).

Regarding claim 25, Moh discloses that the microspheres are gas-filled ceramic microspheres (see column 1, lines 25-40; column 5, line 52 – column 6, line 54).

Regarding claim 26, Moh discloses sintering the microspheres together (column 5, lines 25-35; column 6, lines 1-12).

Regarding claim 27, Moh discloses that a hardened matrix contains the gas filled ceramic microspheres (column 7, lines 9-40; cured resin material forms a hardened matrix).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 28 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moh in view of US 2002/0090514 to Leroux.

Moh fails to teach applying a glaze on the top surface of a substrate comprising microspheres.

Leroux teaches use of a protective glaze on an insulating microsphere-containing layer (see paragraphs 0011, 0022, 0025).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the substrate of Moh, such that it includes a protective glaze, as suggested by Leroux. The rationale is as follows: A person having ordinary skill in the art would have been motivated to use a protective glaze on the microsphere containing layer, because Leroux teaches that a protective glaze will act as an oxidation barrier, and thus prevent underlying layers, particularly those containing refractory metals (commonly used in semiconductor processing), from undue oxidation or delamination (paragraphs 0009, 0011, 0025).

***Allowable Subject Matter***

6. Claims 29 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The primary reason for allowability is the specific requirement of a gas filled ceramic microsphere having a glass material coating, where the glass has a lower melting point than the ceramic.

Although the prior art teaches the usage of both glass and ceramic microspheres, as well as coated ceramic microspheres (see Moh for AlN coating, US 2003/0047718 to Narayan for metallic coating, or US 6,210,715 to Starling et al. for CaP coating), there is no suggestion in the prior art that it would in any way be feasible to apply a glass coating to a hollow ceramic microsphere or that any particular advantages, such as the ability to sinter microspheres together without melting the inner ceramic shell, could be achieved by the claimed glass-coated ceramic

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microsphere. Hence, it is the Examiner's opinion that the invention defined in claims 29 and 30 would not have been obvious to a person having ordinary skill in the art.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 24-46 have been considered but are moot in view of the new grounds of rejection.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Publication No. 2003/0047718 to Narayan et al. discloses the usage of metal-coated ceramic microspheres for electronic devices.

U.S. Patent No. 6,210,715 to Starling et al. discloses coated hollow microspheres having a glass or polymer first layer and a CaP outer layer.

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

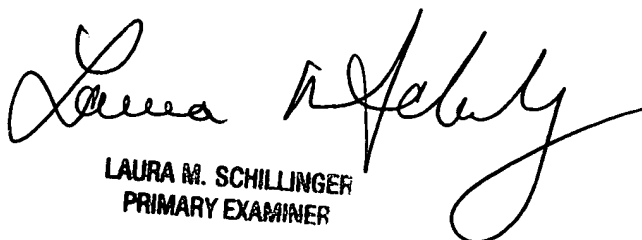
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Dolan  
Examiner  
Art Unit 2813

jmd

  
LAURA M. SCHILLINGER  
PRIMARY EXAMINER